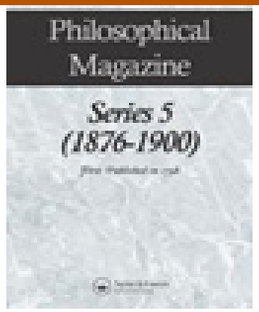

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Measurement of the chemical intensity of the solar radiation

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small amount of electrolysis by a current of electrostatic origin: experiments which are perfectly consistent with the old electrochemical theory, dressed up in the garb of the dissociation theory, and then presented to us as proof positive of this theory.

MEASUREMENT OF THE CHEMICAL INTENSITY OF THE SOLAR RADIATION. BY A. BARTOLI.

The author raises the objection to previous investigations on this subject, that exothermal chemical processes have in many cases been used in which the heat developed must have a disturbing influence. The apparatus of the author consists of two metal vessels fitting one in the other, the inner one of which has a capacity of 7 litres; this is filled with water which has been boiled and then saturated with carbonic acid, and closed air-tight with a glass plate. Carefully selected subaqueous plants were placed in the water. This physiological actinometer was exposed to the sun's rays, and the quantity of oxygen found was determined. At the same time the action of heat and the brightness of the solar radiation was measured. With different heights of the sun the ratio of the oxygen disengaged to the strength of the radiation was almost constant.—*Boll. dell Acad. di Catania*, Jan. 1891; *Beiblätter der Physik*, vol. xv. p. 418.

ON WHEATSTONE'S DETERMINATION OF THE VELOCITY OF ELECTRICITY. BY PROF. J. STEFAN.

Kirchhoff, in his paper on the Motion of Electricity in Wires, first showed in 1857 that, under certain conditions, electricity moves in a thin wire according to the laws of wave-motion, and with a velocity which may be put equal to that of light. The agreement between the velocities of electricity and light is only attained when the first travels in a straight wire stretched in the air. Kirchhoff has restricted his investigation to this case. If the bases of his calculation are applied to other cases, for instance to a wire which is wound in a zigzag, or is coiled in a spiral, it is found that electricity travels in such a wire with far greater velocity. In Wheatstone's well-known experiment a wire was used which was coiled in twenty straight windings, and the velocity of electricity was found to be half as great again as that of light. I think that in the preceding I have given the right explanation of this result. I have, however, attempted to give this explanation an experimental support, and have employed the method given by Hertz of producing stationary waves in wires. I used a circuit like that in Wheatstone's experiment, but on a smaller scale, connected it with a couple of long straight wires, and compared the length of the wave in the circuit with the length of the same wave in the straight wires. The wave in the circuit is considerably longer, and in conformity with this the velocity of electricity in the circuit is greater than in the straight wires, and, according to my experiments, in a ratio which exceeds that found by Wheatstone.—*Wiener Berichte*, April 23, 1891.